

REMARKS

Claims 1-11 are all the claims pending in the application. Applicants amend claims 1, 3-5, 7-9 and add new claim 11. No new matter is added. Support for new claim 11 can be found, for example, at page 8, lines 1-10 of the specification, as filed.

I. Title of the Invention

The Office Action asserts that the title of the invention is not descriptive. The Office Action requires Applicant to provide a new title indicative of the invention to which the claims are directed. The Office Action recommends “Rubber Composition Containing Fullerenes and Tires Produced from the Same”.

Applicants hereby amend the title of the instant invention to recite “Rubber Composition Containing Fullerenes and Tires Produced from the Same”.

II. Claim Objection

Claim 8 is objected to for containing informalities. The Office Action asserts that the “a” should be changed to “the” following the word “wherein”.

Applicants hereby amend claim 8 to recite “wherein the proportion”.

For at least the foregoing reasons, the instant claims contain no objectionable subject matter. Withdrawal of the rejection and allowance of the instant claims are requested.

III. Rejection under 35 U.S.C. § 112

Claims 1-10 are rejected under 35 U.S.C. § 112, first paragraph and second paragraph. The Office Action alleges that the claims are unclear as to the amount of fullerenes which must be added to the composition to achieve the desired result. In particular, it is not clear whether the

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specification requires that 0.1-10 parts by mass of fullerenes are added to the composition, because the amount of fullerenes in the soot and residue is unclear.

The Office Action also alleges that claims 1, 5, 7 and 9 require specific concentrations of fullerenes, however, they instead recite the addition of fullerenes via soot or residue. Thus, the amount of the fullerenes in the soot or residue is indefinite.

Instant independent claims 1 and 9 are amended to recite “fullerene-containing composition,” and “wherein the fullerene-containing composition contains at least one of (2) the soot including fullerenes generated in a process of producing fullerenes obtained by the combustion method and (3) the residue generated by extraction of fullerenes from the soot.” Claims 3-5, 7-8 are also amended accordingly. Support for the amendments can be found, *inter alia*, in paragraphs 24-25 of the instant specification.

In view of the foregoing, the instant claims are not unclear and are not indefinite. Reconsideration and withdrawal of the rejection are earnestly solicited.

IV. Rejection under 35 U.S.C. §102(b) and § 103(a)

Claims 1-10 are rejected under 35 U.S.C. § 102(b) as anticipated by Luckich et al (U.S. Patent 5,750,615), with support from Curl et al (Scientific American 1991). The Office Action alleges that Luckich et al discloses each feature of instant claims 1-10. The Examiner further alleges that Curl discloses the most convenient and cost-effective methods of producing fullerenes (i.e., an “arc” method, or “sooting flame”). Based on the stability of fullerenes, it is allegedly unlikely that fullerenes produced by different processes would be differently structured.

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Additionally, Claims 3 and 4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Luckich et al. The Office Action asserts that it would have been obvious to have skipped the step of separating the soot from the residue, and use the raw product directly.

Further, claims 1, 3, 4 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Luckich et al and further in view of Curl et al. The Office Action alleges that Luckich et al discloses each feature of instant claims 1 and 9, except for teaching specifically the method of combustion for obtaining fullerenes.

Instant independent claims 1 and 9, from which all remaining claims variously depend, are amended to recite “fullerene-containing composition,” and “wherein the fullerene-containing composition contains at least one of (2) the soot including fullerenes generated in a process of producing fullerenes obtained by the combustion method and (3) the residue generated by extraction of fullerenes from the soot.”

Applicants respectfully submit that important changes in the structure of the fullerene-containing *composition* (i.e., soot or residue) occur depending upon the method of manufacture (see specification at page 7, line 25 to page 8, line 21). In this regard, because the fullerene-containing *composition* it is produced by combustion, it exhibits unique x-ray diffraction characteristics. Thus, the fullerene-containing composition recited in the instant claims is not inherent in, nor anticipated by, the methods or products disclosed in Luckich et al. Accordingly, the methods recited in Curl et al (i.e., an “arc” and “sooting flame”) may be relevant as applied to fullerenes, but not a fullerene-containing *composition*. Thus, the Office Action has improperly assumed, without providing further evidence, that Luckich et al. as evidenced by Curl et al. would result in the claimed invention.

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Additionally, Applicants note that the present invention has been made based on the finding that, by adding a small amount (0.1 to 10 parts) of fullerene to a vulcanized rubber reinforced by carbon black, the value of loss tangent (tangent delta) can be improved (lowered) without causing deterioration in the 300% modulus (M_{300}) or breaking strength (T_b) (please see page 17 of the specification). In general, as the amount of the filler (carbon black and/or fullerenes) increases, the value of tangent delta of the rubber increases. However, as shown on page 16 of the specification, Examples 1 to 6 (in which 1 or 5 parts of fullerenes are added with respect to 49 or 45 parts of carbon black, such that the total amount of fullerenes and carbon black is 50 parts) and Examples 7 to 9 (in which 5 parts of fullerenes are added with respect to 50 parts of carbon black, and thus the total amount of the fullerenes and carbon black is 55 parts) exhibit decreased value of loss tangent as compared with Comparative Example 1 (in which no fullerenes is added with respect to 50 parts of carbon black).

Although the reason for the above effect is not clear, it is thought that the addition of fullerenes improves the state of dispersion of carbon black, which is a main component of the reinforcing filler that generates loss tangent.

For at least the foregoing reasons, none of claims 1-11 are anticipated by, nor would they have been obvious over, any combination of Luckich et al and Curl et al.


V. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Respectfully submitted,



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